

Unit 14

More Word Problems

Pass out test
Collect Unit 14 - Day 4 Vertex Form Wkst
Complete word problem worksheet

The steamship, The Golden Conifer, is rented to take 100 campers to Pine Mountain.

The fare is \$5 per camper. If the number of passengers is greater than 100, the steamship company has agreed to reduce the fare by 2¢ per passenger. How many passengers will produce the maximum rental income for the company?

let $x = \#$ of campers/pass over 100

let fare per pass = $5 - .02x$

let $\#$ pass = $100 + x$

Rental Income = (fare per pass)($\#$ of pass)

$$R = (5 - .02x)(100 + x)$$

$$R = -.02x^2 + 3x + 500$$

$$x = \frac{-3}{2(-.02)} = \frac{-3}{-.04} = 75$$

175 passengers

Andy wants the greatest possible harvest from his apple orchard. The orchard contains 220 dwarf trees per acre now, and Andy harvests, on the average, 1300 apples per tree. Because his trees are planted in rows of 10, he adds or removes trees only in groups of 10. Andy's research has shown that for every additional 10 trees he plants per acre, the average yield per tree in the orchard will decrease by 50 apples. How many trees per acre should the orchard contain to produce the maximum harvest?

let $x = \#$ of 10 tree increases

let $\#$ of trees $= 220 + 10x$

let yield / tree $= 1300 - 50x$

HARVEST $= (\text{yield per tree})(\# \text{ of trees})$

$$H = (1300 - 50x)(220 + 10x)$$

$$H = -500x^2 + 2000x + 286,000$$

$$x = \frac{-2000}{2(-500)} = 2$$

240
Tree total

with an initial velocity of 32 feet per second. This can be represented by the equation:

$$h(t) = -\frac{1}{2}gt^2 + v_0t + h_0 \quad \text{where,}$$

g = acceleration due to gravity (32 feet per second per second)

v_0 = initial velocity

h_0 = initial height of object

- a) After how many seconds will the ball reach its maximum height? _____
- b) When will the ball return to the height from which it was kicked? _____
- c) What is the greatest height above the canyon's edge the ball will reach? _____
- d) When will the ball hit the floor of the canyon? _____

Homework:

Max and Min Problems #1